BLUE RIDGE HOTSHOTS FIBER OPTIC

DIVISION 1 GENERAL

SUMMARY OF WORK – 011100

PART 1 - GENERAL

1.1 Scope of Work

The Contractor shall be responsible for furnishing all labor, equipment, transportation, and specified materials/supplies necessary to complete the installation of aproximatly 1,500 lineal feet of multi mode (MM) fiber optic cable (6 strand pairs running to each building; 12 stand pairs total) providing for an outside plant (OSP) fiber optic backbone between three (3) buildings located on the project site. Fiber optic cable penetrations into each building shall be installed with wall mounted NEMA enclosures on the building exterior and terminated in a wall mounted NEMA enclosure with cooling fan, uninteruptable power supply (UPS), and fiber adapter panel in building interior. All fiber optic strands shall be terminated on a fiber adapter panel with duplex LC connectors in the interior NEMA enclosure.

All new fiber optic strands shall be tested to industry standards and shall meet minimun requierments.

Optional work includes the installation of dedicated 15 amp electrical circuits, each with a quadplex 20amp 120v recepticle installed near the new interior NEMA enclosures, and the testing of existing fiber optic cable. The existing fiber optic cable (SM; 24 strands) shall be tested to industry standards.

1.2 Background

The Blue Ridge Ranger Station is a remote facility on the Coconino National Forest.

The ranger station is the main hub for operations on the ranger district. The facility is host to office space, residential buildings, and wearhouse space. The station is located in a dense ponderosa pine forest, and mostly flat, rocky terrain. Office Buildings, living quarters, and operations facilities are located on the ranger station; with wet and dry utilities that service most buildings.

Users located on this facility have historically experienced a substandard level of service with regards to telecomunications and internet bandwith. This low level of service limits the telecoms capacity and reliability for the workforce on-site.

The existing telecom infrustructure is in need of upgrades before the network can be improved.

1.3 - Location

All work items contained in this contract will be located at the Blue Ridge Ranger Station in the Coconino National Forest, near Happy Jack, AZ:

Blue Ridge Ranger Station:

Address:
8738 Ranger Road
Happy Jack, AZ
86024

Directions:
From Flagstaff, Arizona, take Lake Mary Road (CR-3) southbound for 53.6 miles. At the Junction of Lake Mary Road (CR-3) and AZ-87, Turn Left (to the East) and travel for 9.1 miles. Blue Ridge Ranger Station will be located on the right side of the road (south side).

1.4 Work Description:

BASE ITEMS

1) Fiber Optic Cable

a) Approximately 1,500 lineal feet of Multi Mode (OM4) loose tube fiber optic cable shall be installed as a fiberoptic backbone. Fiber optic cable shall be rated for OSP use and appropriately rated for the installed application

i) 24 fiber optic strands (12 strand pairs) shall be run between the recreation modular building and the maintenance building (refer to site schematic)

ii) 12 fiber optic strands (6 strand pairs) shall be run between the recreation modular building and the hot shot building (refer to site schematic)

iii) The suggested alignment for the proposed fiber optic cable backbone is shown on the Site Schematic, included in this document. However, the contractor is responsible for choosing the final alignment that is cost effective, low impact, and provides the required infrastructure; as specified in this contract. Proposed alignment must be approved by contracting officer's representative (COR) prior to construction. **There will be no adjustment of payment to the contractor based on deviations to the proposed alignment shown in this document.**

b) Fiber optic cable shall be installed underground using 1-1/4 inch conduit, Schedule 80 PVC or SDR 13.5. Three parallel conduits shall be installed along the entire alignment of the fiber optic cable. Each conduit shall have 2500 pound pull tape located within the entire length, pull tape ends shall be secured and accessible within handholes, pull boxes, or NEMA cabinets. Contractor is responsible for avoiding and resolving any conflicts with existing site utilities (existing utility plans provided in this contract). All existing trees shall remain undisturbed, fiber optic cable shall not encroach within any existing tree drip line. Conduit that extends above grade shall be rated for UV exposure. All conduit shall be sealed around cable (vacant conduit shall be sealed as well) using water proof fire-retardant sealer to prevent water and pest from entering conduit.

At/below grade installations shall utilize trenching and excavation methods. All trenches must be uniform in width. All instances of trenchless construction must be approved by COR. Contractor shall review existing utility plans (provided in this contract) for potential utility conflicts.

Underground installations must be installed with a minimum of 24 inches and a maximum of 36 inches of cover, measured from the top of the cable or duct to the top of final grade above the cable.

(1) Trench bottom shall be compacted to 90 percent proctor. Conduit shall be installed on a bed of sand with minimum 1 inch depth, compacted to 90 percent proctor, along the entire length of the buried cable.

(2) A minimum of 3 feet of horizontal separation and 1 foot of vertical separation must be maintained between buried/underground fiber optic cable and appurtenances and all other existing utilities.

c) Utility markers shall be installed along the horizontal alignment of below grade fiber optic cable with a maximum spacing of 200 linear feet between each marker. A utility marker shall be placed at each point where horizontal alignment turns by 10 degrees or more and at each point were horizontal alignment crosses into paved areas (marker posts shall be offset from pavement a minimum of 3 feet). Markers shall be labeled to indicate buried fiber optic cable and shall have orange coloration in accordance with APWA uniform color code. Markers shall be vertical posts in locations with unimproved/natural grade and shall have 4 feet of post height above grade and a minimum of 2 feet of buried post depth. Markers shall be bronze disks (minimum 2” diameter) in paved areas and do not require orange markings. Pavement markers shall be installed with epoxy to adhere to the pavement and shall be countersunk into pavement so that the top of disk does not protrude above the top of pavement.

d) Where trenching methods are utilized for construction, a detectable warning tape shall be installed directly above the fiber optic cable, a minimum of 4” above the fiber optic cable and a minimum of 12” below the final grade. Warning tape shall be 6” wide and shall be designed to be detected with metal detectors. Warning tape shall have orange coloration and shall have legible writing that indicate buried fiber optic cable.

(1) Tracer wire shall be installed for all sections of underground fiber optic. Tracer wire shall be USE, RHW, or RHH solid 10 gauge wire, corrosion resistant, and electrically continuous between terminal ends. Tracer wire shall be attached to cable or conduit with tape, at a minimum of 3 foot intervals along the cable or conduit. A minimum of 1 lineal foot of coiled wire shall be accumulated in any underground vaults or above ground pedestals. Bare (uninsulated) tracer wire shall not be allowed except at terminal ends. Tracer wire terminal ends shall be crimped with copper lugs and provided with at-grade tracer wire access points with sufficient terminals dedicated for each tracer wire and grounding conductor. A 1.5 pound drive-in magnesium grounding rod shall be installed at each terminal end of tracer wire. Tracer wire access points shall be installed to easily allow removal of the bond between grounding rod and tracer wire.

e) Precast Polymer Concrete Handholes (ANSI 77 Tier 22) with weatherproof patch panels shall be placed in the following locations. All fiber optic strands passing through these handholes shall be terminated with LC UPC Duplex connectors and shall be connected to the weatherproof patch panels within the handhole. (handholes adjacent to vehicular areas shall receive bollard protection or shall be rated for vehicular loading; AASHTO H20):

(1) <u>Recreation Modular</u>

(a) The handhole shall be placed between 20 and 50 feet from the recreation modular. The existing fiber optic cable (between the main office and the recreation modular) shall connect to the proposed fiber optic cable via patch panel. All 24 strands shall be connected via patch panel.

(b) Separate from the 24 strand cable, one single fiber optic pair (OM4) shall be run from the patch panel in the handhole to the recreation modular building and shall be terminated in the interior NEMA cabinet.

(2) <u>Maintenance Building</u>

(a) The handhole shall be placed between 10 and 20 feet from the maintenance building.

(b) The proposed 24 strand fiber optic cable shall enter the handhole and (2) 12 strand fiber optic cables shall exit the handhole. One of the 12 strand cables shall be run into the maintenance building and the other cable shall be run into the hotshot building. All strands of

the (2) 12 strand cables shall be connected to the 24 strand cable via patch panel

f) Unless specified otherwise, all midspan splices in the OSP fiber optic cable shall be avoided and require COR approval. Mid span splices shall be installed with a service loop of minimum 3 lineal feet on either side of the splice. The service loop and splice shall be located within a precast concrete-handhole or vault with minimum dimensions of 36”x48”x24. Service loops must be secured and protected using approved brackets or mounts. Vaults and enclosures shall be weather proof and shall prevent precipitation, ground water, and storm runoff from entering the enclosure. Vaults and pedestals shall not be placed in paved areas and must be placed a minimum of 3 feet way from edge of pavement. All splices shall be fusion type and shall have trays or equipment to house the spliced fibers in an organized and protected manner.

g) Any metallic components of the fiber optic cable, or appurtenances, that are likely to become energized or carry electric current must be grounded/bonded in accordance with NEC and NESC guidelines. Any new metallic components that enter a building shall be bonded and grounded at the point of entry to the building.

2) Exterior NEMA Enclosures

e) NEMA 3R enclosures shall be mounted to the exterior of the building at each fiber terminal location. Enclosures shall be sized to accommodate the application

f) Enclosure shall be sealed, weatherproof, and exclude rodents from entering the enclosure.

g) A minimum of 3’ of fiber optic cable service loop shall be coiled within the NEMA enclosure

h) Penetrations into the buildings shall be weather and rodent proof. Enclosure shall be mounted in a manner that prevents debris, rodents, and moisture from accumulating against the building.

i) Existing NEMA enclosure on the Recreation Modular may be utilized for proposed fiber optic penetration.

j) Enclosure shall be mounted according to manufactures recommendations and shall support nominal and environmental live loading without structural failure

3) Interior NEMA Enclosure

e) NEMA 12K enclosures, 22U (19 inch rack and 24 inch depth) with 1500VA/2000W rack mounted UPS and incorporated case cooling fans rated for minimum of 38 CFM. A rack mounted 8 outlet Power Distribution Unit (PDU) shall be provided in the cabinet

f) NEMA Enclosures shall be installed with a Class A fire retardant backer board that provides a complete barrier between the enclosure and the wall to which it is mounted.

g) NEMA enclosure shall be mounted according to manufactures recommendations and directly to structural components of the building/wall. Drywall or interior sheathing is not considered a structural component.

h) Dedicated grounding equipment shall be installed for each interior cabinet (refer to ADI &PIAB Installation Details; attached to the solicitation), including ground rod and ground bus bar. NEMA cabinet shall be bonded to grounding equipment according to detail drawing.

i) Existing NEMA Enclosure located in the recreation modular building may be utilized if there is space for all required components.

j) Enclosure shall be mounted to support nominal and environmental live loading without structural failure

4) Fiber Optic Termination

e) All fiber optic strands shall be terminated on both ends with lucent connector (LC) MM (OM4) ultra physical contact (UPC) duplex connectors. All terminal strand ends shall be affixed to a fiber patch panel with LC adapters and mounted to the interior NEMA enclosure. Splice tray is required for spliced pigtails.

i) **Maintenance Building and Hotshot Building;** The terminal ends of the fiber optic cable shall be mounted in the interior NEMA enclosures at the maintenance building and hotshot building utilizing patch panel mounted in the NEMA enclosure to secure the terminal ends.

ii) **Recreation Modular Building:** The terminal end of the fiber optic cable shall be mounted in an underground concrete vault near the recreation modular building. The terminal end of the existing aerial fiber optic cable shall be connected to the new fiber optic cable and shall be housed in a waterproof splice box mounted in the vault.

f) All Individual fiber pairs shall be color coded and labeled, matching at terminal ends with A to B Duplex fiber polarization.

g) Pigtails shall be fusion spliced; COR approval is required for other splice methods.

h) All Fiber connectors and adapters that remain unused shall have dust covers installed. All terminal ends shall maintain a pristine end-face condition.

i) Fiber optic cable and fibers shall be secured in a manner to limit excess stress and bending.

5) Fiber Optic Testing; New Fiber Optic Cable

e) All New fiber optic strands shall be tested after installation is complete, in accordance with industry standards

i) Connectors shall be tested for end finish, cracks, scratches or dirt according to IEC 61300-3-35.

ii) Test all fibers for insertion loss, measured length and, polarity using OLTS (tier 1), according to TIA-526-7-A

iii) Verify A to B duplex fiber polarization, according to TIA-568

iv) Splice performance shall meet limits specified in TIA-568

f) Results of testing shall be certified to conform with all testing standards and shall be submitted to COR prior to contract closeout.

g) Contractor must repair or replace any equipment or materials within the scope of this contract that fail to meet industry standards and/or standards listed in 5.a. of this work description.

h) Repair and replacement of substandard equipment or materials shall be made at no additional cost to the government.

i) As-built schematic showing alignment of OSP cable with off-set dimensions shall be provided to COR upon completion of cable installation

OPTION ITEMS (option items shall only be executed at the request of the government)

6) Fiber Optic Testing; Existing Fiber Optic Cable

e) Existing 24 strand fiber optic cable that connects main office to recreation modular building shall be tested to industry standards, including all standards included in 5.a. of this work description.

f) Each of the 24 strands of the existing fiber optic cable shall be tested. Each matching terminal end shall be labeled.

g) Results of testing shall be certified to conform with all testing standards and shall be submitted to COR prior to contract closeout.

7) Electrical Circuit w/ Duplex Recepticle

e) A dedicated electrical circuit shall be installed with a duplex 20 amp, 120V electrical receptical within 6 linear feet of the interior NEMA enclosures. Recepticle may be integrated into NEMA enclosure in accordance with manufactures recommendations.

f) New electrical circuit components shall be connected to the existing building electrical service. Existing circuits, switches, and recepticles shall remain in place without modifications unless approved by COR. Contractor will be responsible for any upgrades required to the existing electrical service, or electrical panel; at no additonal cost to the government.

g) All electrical work shall conform to NEC as adopted by Coconino County.

8) Replacement of Existing Fiber Optic Cable

e) The existing fiber optic cable between the main office and the recreation modular buidling shall be replaced with new Multi Mode (OM4) 24 strand fiber optic cable, approximatly 450 linear feet.

f) The terminations of this fiber optic cable shall be located in the main office and the proposed handhole near the recreation modular building. An existing 12 pair patch panel is located in the main office and can be resued to mount the terminal ends of fiber optic cable. The opposite end of the fiber optic cable shall be mounted in the requiered handhole near the recreation building, mounted to a weather proof patch panel.

g) Installation shall follow the same specifications as section 1.4.1 of this specification section, and terminations of this cable shall follow 1.4.4 of this specification. All fiber strands shall be tested to the same specifications as section 1.4.5

1.5 – Work Specifications and Construction Codes

All work shall conform to the following specifications/standards/codes/guidelines:

- All codes adopted by Coconino County with regards to construction
- ANSI and ASTM Standards for applicable materials and installations
- EXHIBIT K – Telecommunications Infrastructure Division 27 – Agency Specific Requirements
- National Electrical Safety Code (NESC)
- ISO/IEC 11801
- ISO/IEC 14763-2
- ISO/IEC 14763-3
- TIA/EIA-526
- TIA/EIA-568A
- TIA/EIA-569B
- TIA/EIA-606A
- TIA/EIA-607A
- TIA/EIA-72
- TIA/EIA-67
- TIA/EIA-TSB75
- TIA/EIA-758
- NECA/FOA 301-2016
- FOA OSP Construction Guide

When the requirements contained in this document conflict with the requirements of the above codes with regard to quality, quantity, type of material, or workmanship of construction; the requirements of the applicable codes in this section shall govern

1.6 – Pre-Bid Meeting/Site Visit

Offerors shall contact the POC for scheduling of site visits

POC: Andrew Porras
928-714-6128
Andrew.Porras@usda.gov

1.7 – Required Certification

All fiber optic cable installation shall be completed by, or under direct supervision of, a BICSI Certified Technician or FOA Certified Fiber Optic Technician

All testing of fiber optic cable shall be completed by, or under direct supervision of, a BICSI Certified Technician or FOA Certified Fiber Optic Specialist (Testing). Testing reports shall be certified by the responsible certified individual.

1.8 – Contractor Representative

The contractor shall provide a contract representative for the performance of the work. The name of this person and an alternate(s) who shall act for the contractor when the contractor is absent shall be designated in writing to the contracting officer. The contractor representative or alternate shall have full authority to act for the contractor on all contract matters relating to daily operation of this contract.

1.9 – Timing/Scheduling of Work

Contractor shall have 90 days from Notice to Proceed to complete all contract work. Work site shall be open to normal work activities during construction. Contractor shall provide 48 hour notice prior to service/access disruptions and shall coordinate service/access disruptions with COR. ~~No restrictions are placed on weekend work.~~

Contractor shall provide a schedule of proposed work prior to commencement or mobilization. At least 72 hours notice must be given to the COR prior to contractor mobailzation on-site.

Permited work hours will be from 7am to 7pm. Contractor is permited to perform work all 7 days of the week. Requierd COR inspections will only occour Monday through Friday, excluding federal holidays.

1.10 – Submittals and Approvals

Contractor shall submitt for approval the manufactures specifications of the items below, prior to commencment of work:

- Fiber Optic Cable
- OSP Enclosures
- Interior enclosure and contained equipment
- Exterior enclosure and contained equipment
- Fiber optic pigtails
- Fiber optic splicing materials and equipment
- Electrical components (including wire, conduit, panels, recepticles, breakers)
- Pavement restoration materials and methods
- Buried Utility markers and adhesives
- Utility poles and all other fiber optic cable appurtenances

Contractor shall submit a schematic of the proposed cable alignemnet and shall set flagging or staking along the proposed fiber optic alignment for new fiber optic cables for approval by COR. The location of proposed utility poles, manholes, hand holes, and enclosures shall be shown on the schematic and flagged in a conspicous maner that distinguishes these specific improvements. The proposed location of exterior enclosures to be mounted directly to buildings shall be marked on the building with removable chalk.

Contractor shall provide copies of personel certifications requiered in this contract.

Contractor shall provide loading/strength calculations and designs for any aerial fiber optic cable instalations. Design shall conform to NESC guidelines.

Work shall not commence (including trenching, digging, and excavation) until contractor has received approval from COR for proposed layout and materials.

Contractor shall submit results of fiber optic testing and as-built drawing of new cable after installation is complete.

As-built drawings shall indicate horizontil alignment of new fiber optic cable and locations of any new appurtenances (e.g. underground vaults, utility poles, splices, etc). As-built drawing shall provide the following information:

- Off-set distances of fiber optic cable and new appurtanences from nearby permanent surface feartures, at a minimum spacing of 200 feet and at each change of horizontil alignment.
- Buried depth and vertical clearance of fiber optic cable.
- Cable type, size, material, and number of strands
- Appurtanence type, size, material
- Utility crossings with GPS coordinates and vertical clearance
- Call outs for any improvements requiering COR approval.

1.11 – Quality Control/Quality Assurance

All work shall be completed in accordance with county/state applicable codes, project specifications, and manufacture's recommendations and instructions. The contractor shall provide all labor, material, and equipment necessary to perform all the operations for the work specified.

Contractor is solely responsible for verifying conditions of the existing work site. Any discrepancies between the existing conditions of the work site and the specifications in this contract found by the contractor shall immediately be reported to the COR. Work shall not continue, within the conflicting scope, until discrepancies have been resolved.

Dimensions of existing conditions are provided in these documents as reference only, it is the contractors sole responsibility to verify these dimensions and determine the requiered material quantities and construction methods needed to complete all items contained in this contract.

Burried improvments shall not be backfilled until COR has approved installation of improvments.

Contractors activities and final improvements shall not interfear to the detriment of any existing facilities.

Contractor shall provide 3 cylinders (minimum 4”x8”) of curred concrete slurry, made with the same batch of slurry used on the project. When multiple batches of slurry are used for construction, concrete cylinders shall be made using distinct and different slurry batches.

1.12 – Use of Government Facilities

1. The work site is available to the contractor for staging and storage during construction. The general areas of use shall be approved by the COR. Any damage resulting from the Contractor's use of the site shall be repaired or replaced at the Contractor’s expense at the direction of the Engineer.

2. Camping sites: No Forest Service campgrounds shall be made available for use by Contractor or his/her employees. All personel under supervision of the contractor and subcontractors shall abide by all laws regarding camping and overnight use of Forest Service land.

3. Sanitary facilities for construction workers shall be furnished and maintained by the Contractor during the period of work.

4. All temporary services and use areas shall be completely removed and the areas restored to existing conditions upon completion of use.

5. Electricity is available on site for contractor’s use .

6. Potable water is available on-site for contractors use. Water use shall be limited to 20 gallons per day unless otherwise approved by the COR. Only designated hydrants may be used for contractor’s water draw.

7. Transportation to and from the work site for the contractor's personnel and materials shall be provided at the contractor's expense.

1.13 - Material Sources

All materials shall be obtained from a commercial source unless noted otherwise. All materials of same type shall originate from a single source.

1.14 - Clean up and Disposal

The Contractor shall keep the work site free from accumulation of waste materials and rubbish resulting from the work.

All materials and equipment provided by contractor that are not part of the final improvements or scope of work, shall be removed from the site by the contractor prior to contract closeout.

All materials that are demolished or waste must be disposed of by the contractor, unless otherwise specified. Disposal of waste material will be off National Forest Land and in compliance with local, state and federal laws regarding disposal of waste.

Before final acceptance of the project by the Government, the Contractor shall remove from Government land all waste materials and rubbish resulting from this work.

1.15 - Subsurface Soils and Investigations

Geotechnical subsurface soil investigation will not be provided to the contractor as a part of this contract.

Under supervision of the COR, the Contractor may undertake any site investigations necessary to ascertain subsurface conditions.

According to the USGS soil survey, the project site is situated in the Hogg fin sandy loam formation. Comprised of sandstone and limestone, charactarized by well drained fine sandy loam, clay loam, clay, and stony clay. 10 percent of surface area is coverd by cobbles, stones, or bolders. Depth to bedrock is 24 to 60 inches. Depth to water table is more than 80 inches. Contractor shall not rely on this information for accuracy of existing site conditions.

1.16 - Precautionary Measures

Environmental Protection:

All vehicles and equipment entering the project area must be clean of noxious weeds and will be subject to inspection. Wash all construction equipment to thoroughly remove all dirt, plant, and other foreign material in a legal manner and prior to entering the forest service boundary. Particular attention must be given to the under carriage and any surface where soil containing exotic seeds may exist.

Protection of Work:

The Contractor shall take precautions to protect all work during the construction period and shall provide and maintain adequate protection during severe weather conditions to prevent damage to the work, materials and equipment.

Safety:

The Contractor is responsible for safeguarding employees, public, existing facilities, and forest resources from their operations. All operations shall be in compliance with the requirements and restrictions of OSHA, the Arizona

Occupational Safety and Health Code, and the Workman's Compensation Board. The Contractor shall erect signs and chain-link fencing barricades as necessary to make unguarded operations safe. Signs and barricades shall be maintained at night and on weekends. Precautions such as lowering tractor blades and safely storing materials shall be practiced to prevent injury to others in the area.

Security:

No security will be provided by the Government. The Contractor shall take all precautions deemed necessary to secure the worksite, improvements and equipment. This may include security fencing and/or a night watchman with mobile communication.

1.17 – Protection of Existing Conditions

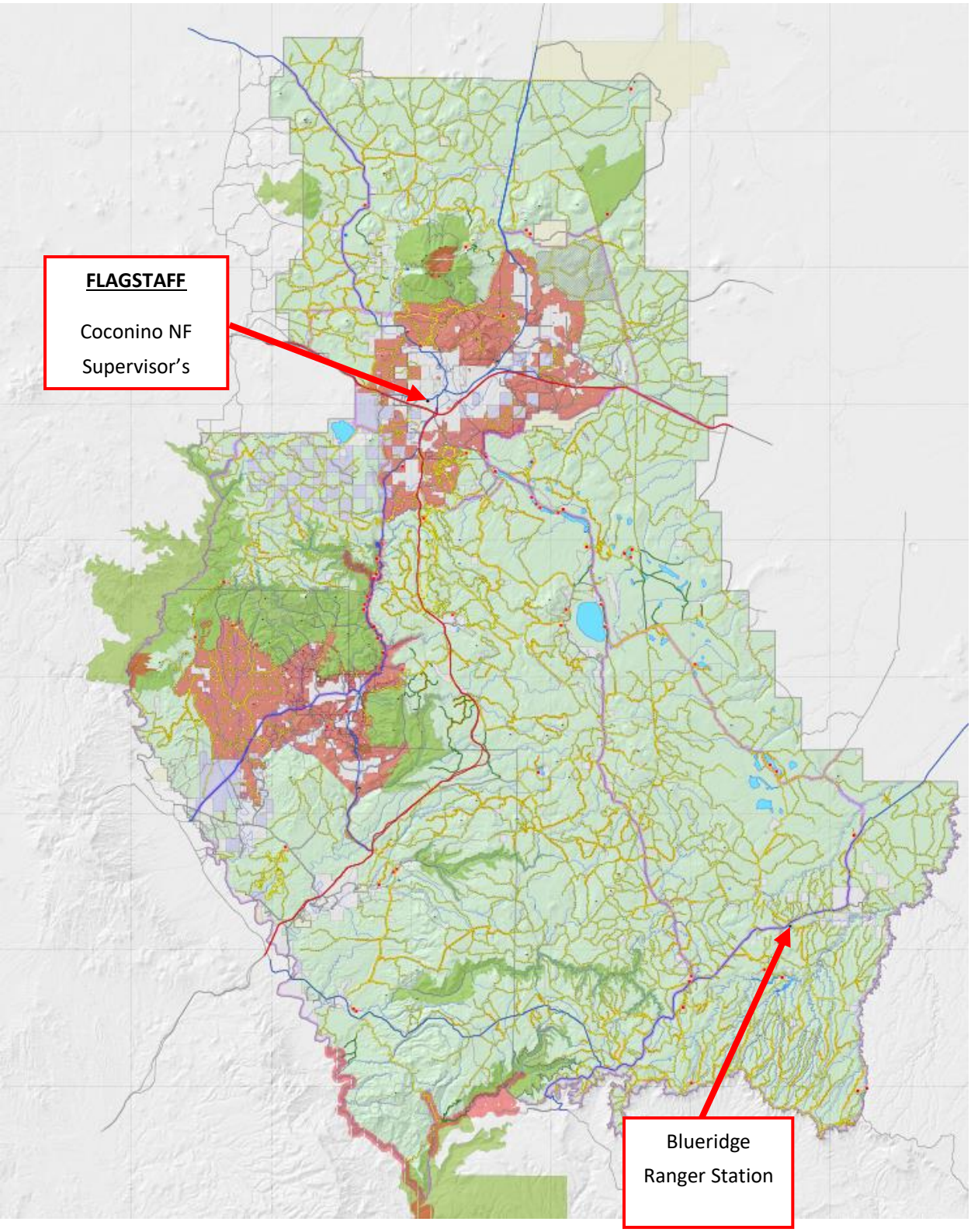
Contractor is responsible for protecting all existing improvements. Contractor shall make repairs to any existing improvements that have been damaged due to the direct or indirect actions of the contractor/subcontractors. Repairs to damaged existing improvements must be made at no additional cost to the government.

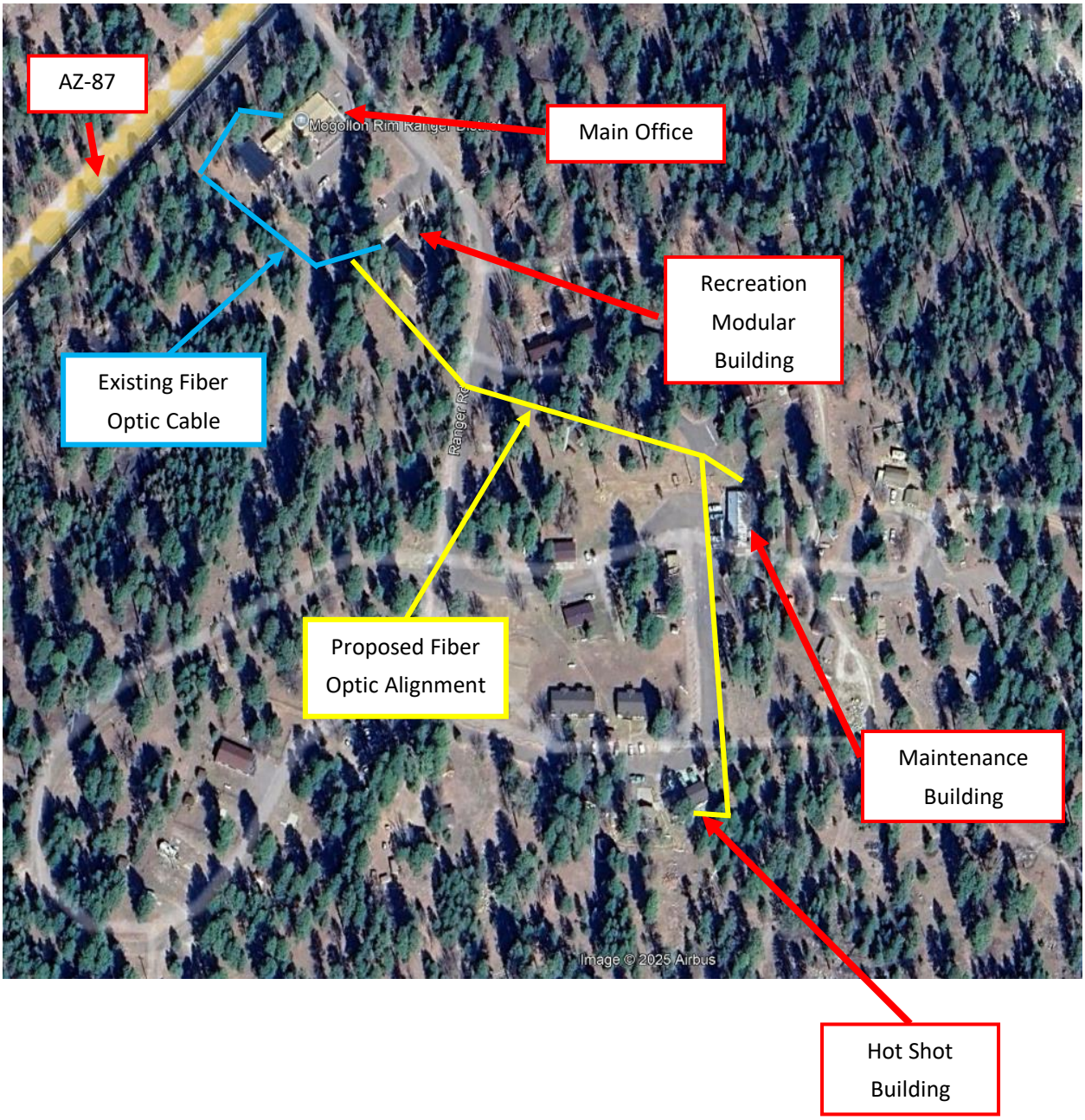
Any existing improvements with damage, directly or indirectly, caused by the contractor must be repaired to the same, or better, condition that was existing prior to contractor activities.

Contractor shall avoid the need to remove any existing trees. Contractor shall obtain approval from COR prior to removal of any existing trees.

Exisitng site utility plans have been provided as a part of this contract, contractor is responsible for verifying the accuracy and validity of the site utility plans provided. The government makes no guarantee of the accuracy of existing utility plans.

1.17 – Location Maps





Blueridge Ranger Station

Site Schematic

006 – Electrical Otlet

SUMMARY OF WORK
011100

1.18 – Photos

Photo 1 – Server Room Exterior, Main Office Building

Photo 2 – Existing Fiber Enclosure, Main Office Building

Photo 3 – Existing Aerial Fiber Optic Cable and Utility Poles

Photo 4 – Existing Aerial Fiber Optic and Utility Pole

Photo 5 –Recreation Modular; Northwest Corner

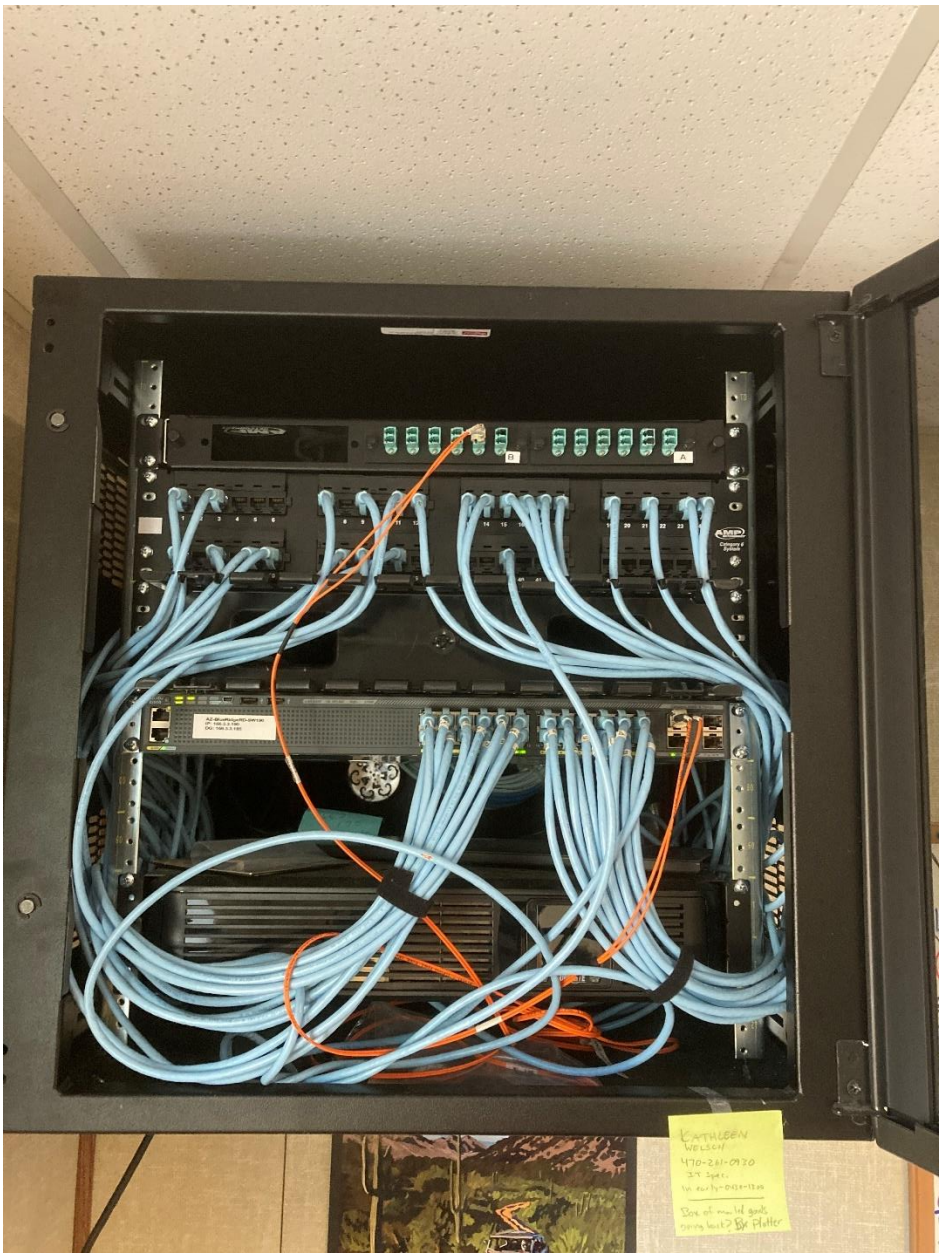


Photo 6 – Recreation Modular, Existing Interior Equipment Enclosure

Photo 7 – Maintenance Building, North Wall Exterior

Photo 8 –Maintenance Building, Interior North Wall

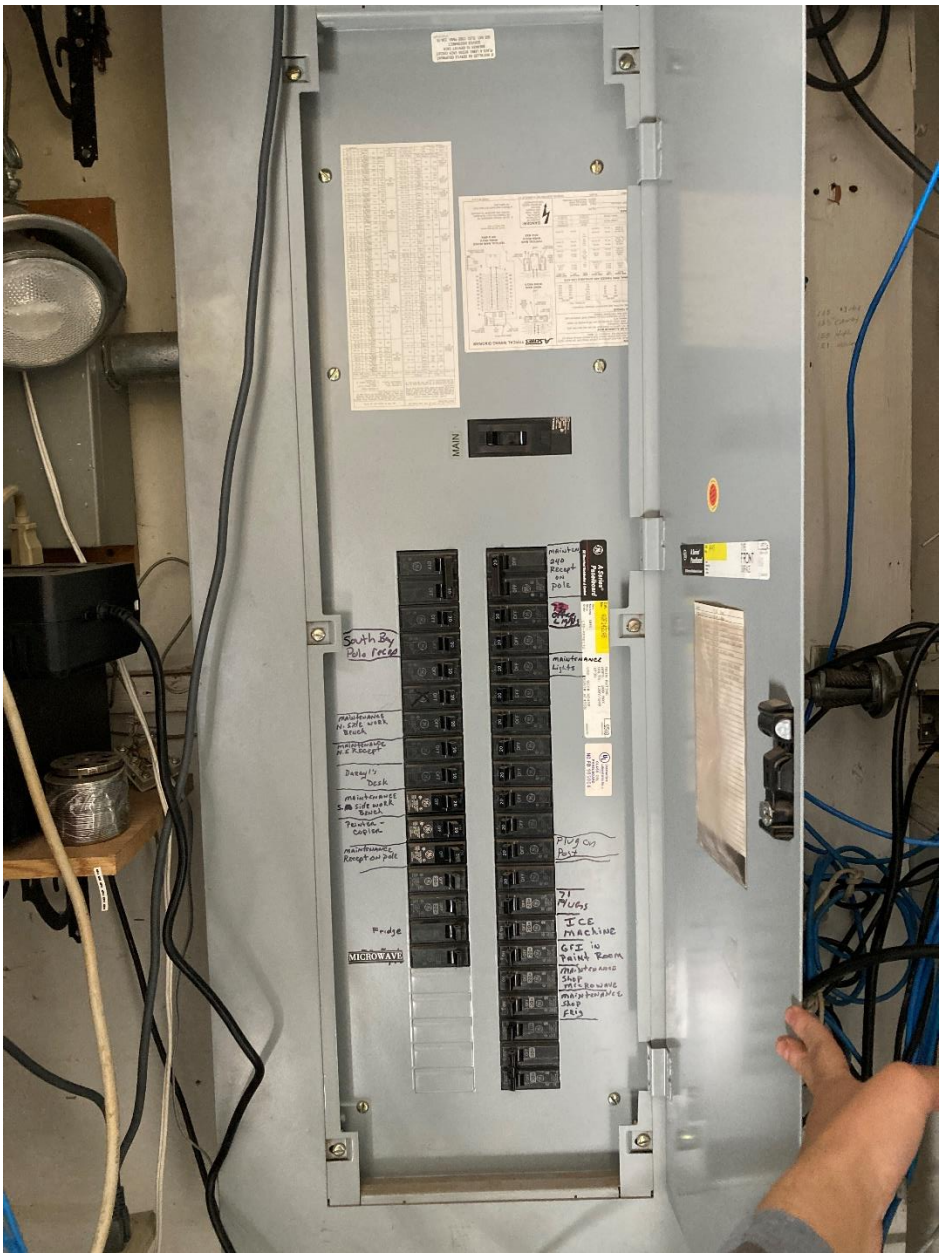


Photo 9 –Maintenance Building, Electrical Service Panel

Photo 10 – Hot Shot Building, South Wall Exterior

Photo 11 – Hot Shot Building, East Wall Exterior

Photo 12 – Hot Shot Building; Northeast Corner Exterior

Photo 13 – Hot Shot Building; Southwest Corner Exterior

Photo 14 – Hot Shot Building, West Bay (facing East)

Photo 15 – Hot Shot Building, East Wall Interior

Photo 16 – Hot Shot Building, Existing Electrical Panel

END OF SPECIFICATION 011100